

## REMARKS

Applicants acknowledge the courtesies extended to applicants' representative during a telephonic interview with the Examiner on April 1, 2003. During the interview, the cited references were discussed with respect to the pending claims. The substance of the interview is reflected in the remarks below.

Claims 1-15 are pending. All of claims 1-11 were rejected under 35 U.S.C. § 102. Claims 12-15 were withdrawn from consideration. Claim 16 is added, but does not introduce new matter into the application. Applicants respectfully traverse and request withdrawal of the rejections.

Rejection Under 35 U.S.C. § 102(b)

Claims 1-7 were rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 5,309,874 ("Willermet"). Applicants traverse the rejection.

The present invention claims a surface layer comprising at least a ceramic layer, a transition layer, and a substrate element, which is a metallic substrate element. The ceramic layer contains a chemically bonded metal. The transition layer contains the metal of the ceramic layer and the metal of the substrate element. *See, e.g.*, Claim 1. As illustrated with respect to Figure 1, ceramic layer 2 substantially contains titanium oxide ( $\text{TiO}_2$ ) and substrate element 4 consists of aluminum alloy ( $\text{AlSi}_9\text{Cu}_3$ ). Transition layer 3 is formed from a reaction between ceramic layer 2 and substantive element 4 and contains

titanium aluminides ( $\text{Al}_3\text{Ti}$  and  $\text{TiAl}$ ) and aluminum oxide ( $\text{Al}_2\text{O}_3$ ) and  $\text{TiO}_2$ . See ¶ 0018. A reaction of this type is described in ¶ 0009.

Willermet does not disclose a surface layer satisfying all the limitations of the claims. Rather, Willermet indicates that it relates to “a component having a hard, wear resistant amorphous or nanocrystalline ceramic coating system of constant, abruptly varying or continuously varying composition deposited thereon” (col. 1, lines 10-14). A stated object is “to provide a satisfactory ceramic film interlayer substrate system having a graded or abruptly varying composition which can improve adherence, while providing additional mechanical support to a load-bearing surface” (col. 3, lines 5-9). Where the coating is “graded”, for example, using physical vapor deposition or chemical vapor deposition, the disclosed coating system “may be deposited in a single deposition step *by varying the composition of precursor vapors* continuously (if a continuous composition profile is desired) or abruptly (if an abruptly varying composition profile is desired) in a deposition chamber” (col. 2, lines 56-61)(emphasis added). Willermet does not mention a transition layer with intermetallic phases.

Willermet thus does not satisfy the limitations of the present claims, which require a ceramic layer with a chemically bonded metal and also require a transition layer containing intermetallic phases comprising the metal of the substrate element and the metal of the ceramic layer. Willermet does not support a rejection under 35 U.S.C. § 102.

Rejection Under 35 U.S.C. § 102(e)

Claims 1-3, 5, and 8-11 were rejected under 35 U.S.C. § 102 as anticipated by U.S. Patent No. 6,436,519 (“Holzchuh”). Applicants traverse the rejection.

As shown in Figure 2, Holzchuh discloses a hard metal base body 7 with a wear-reducing coating 6 which, in turn, comprises a substrate 8 with a bonding layer 12 and an aluminum oxide layer 9, and possibly a cover layer 11. (See col. 3, line 53 – col. 4, line 24; *also see* col. 4, lines 34-37.) Holzchuh does not disclose that bonding layer 12 comprises intermetallic phases of the metal in the hard metal base body 7 and the metal in the aluminum oxide layer 9. Nor, does Holzchuh disclose that substrate 8 comprises intermetallic phases of the metal in the hard metal base body 7 and the metal in the bonding layer 12. (Note that if substrate layer 8 were asserted to be the recited “substrate element”, rather than the metal base body 7, Holzchuh discloses a substrate layer 8 of nitride, carbide, or carbonitride. See col. 4, lines 1-10.)

Holzchuh thus does not satisfy the limitations of the present claims, which require a ceramic layer with a chemically bonded metal and also require a transition layer containing intermetallic phases comprising the metal of the substrate element and the metal of the ceramic layer. Holzchuh does not support a rejection under 35 U.S.C. § 102.

CONCLUSION

For the reasons provided above, applicants respectfully traverse the rejections and respectfully request reconsideration of the claims. Applicants note

that claim 1 has not been amended, and that no disclosure has been identified to support a § 102(b) rejection under either cited reference.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #225/50220).

Respectfully submitted,

April 3, 2003



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